

A REVISION OF THE SPECIES OF THE SUBGENUS *PLECTRALIDUS* (*HARPALUS*, HARPALINI, CARABIDAE) FROM NORTH AMERICA

by ALY ALY EL-MOURS¹

Casey (1914) presented a key for the identification of the species of the subgenus *Plectralidus* (genus *Harpalus*) in which he described four new species namely: *caudalis*, *collucens*, *acomanus*, and *rectangulus* in addition to the two species *erraticus* and *retractus* previously described by Say (1825) and Le Conte (1863) respectively. A study of Casey's descriptions revealed that the characters utilized for separating the species are vague and can hardly be applied. He gave his descriptions from few specimens and combined the range of measurements of both sexes. He based his key on male and female characters although it appears that he had only two male specimens of the species *collucens* and one male specimen of the species *rectangulus*.

As more than 300 specimens of *Plectralidus* were available here, it was suggested by Dr. G. E. Ball that a revision of this group be undertaken in order to evaluate the validity of these species on the grounds of more precise and distinct characters.

Specimens were available from various localities in North America. The characters of both sexes were studied, the male genitalia were dissected and the most distinctive features defined. The total body length of the insect was taken as the sum of the length of the head (linear distance from the base of mandible to the posterior margin of the eyes), the length of the prothorax and the length of the elytron. As the measurements taken were not found useful as a diagnostic character, only the maximum and minimum length of both sexes of each species are included in the text.

I am greatly indebted to Dr. G. E. Ball for his invaluable guidance, criticism and advice during the progress of the work; without his help the present study could not have been accomplished. A large number of the specimens was collected by him. I also wish to extend my thanks to Dr. G. W. Byers, Department of Entomology, University of Kansas and to Mr. T. J. Spilman, United States National Museum, for the loan of material. Mr. Spilman also gave valuable help by examining the type specimens and reporting on them to me. I wish to express my gratitude to Professor B. Hocking for reading and criticising the manuscript.

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Subgenus **Plectralidus** Casey, 1914

Plectralidus Casey, 1914: 72.-. Leng 1920: 70.— Csiki, 1932: 1186.

TYPE SPECIES: *Harpalus erraticus* Say, 1825 (Designated here).

The diagnostic characters of the subgenus *Plectralidus* are as follows:

Body is elongate and variable in size. Colour varies from pale brown to deep black. Elytral apices are sometimes conspicuously spiniform in the female. The internal sac of the male genitalia has a pointed spine at its dorsal end.

A careful examination of the specimens of *Plectralidus* showed that they could be arranged in two groups which I consider to be specifically distinct. From a study of the literature it appears that one of these groups may be referred to *erraticus* Say and the other to *retractus* Le Conte.

1. **Harpalus erraticus** Say, 1825

The colour of both sexes varies from dark brown almost black to pale brown, the majority of specimens being light brown. In the pale specimens, which are probably teneral, the pronotum is lighter in colour than the elytra.

The length of the largest male is 15.0 mm., that of the smallest male is 13.0 mm. The largest female measures 15.5 mm. and the smallest 11.0 mm.

The basal angles of the prothorax are obtuse and narrowly rounded (Fig. 1). The outer angles of the elytral apices are spiniform in the female (Fig. 2) and obtuse in the male (Fig. 3).

The median lobe of the male genitalia ends in a vertical triangular, constricted plate, the basal part of which is more or less pointed and the upper end flat and slightly curved (Fig. 4).

This species occurs in the north and east of North America (Fig. 8) as follows: 1) 186 specimens from the following localities have been examined in the present study:

A. The United States of America:

COLORADO (3 males and 2 females)—“Colorado.” Las Animas County: Cockedale. Weld County: La Salle.

CONNECTICUT (2 males)—New Haven County: New Haven City.

ILLINOIS (2 males and 4 females) — Cook County: Chicago, Palos Park.

IOWA (4 males and 1 female)—Buchanan County: Independence.

Johnson County: Iowa City.

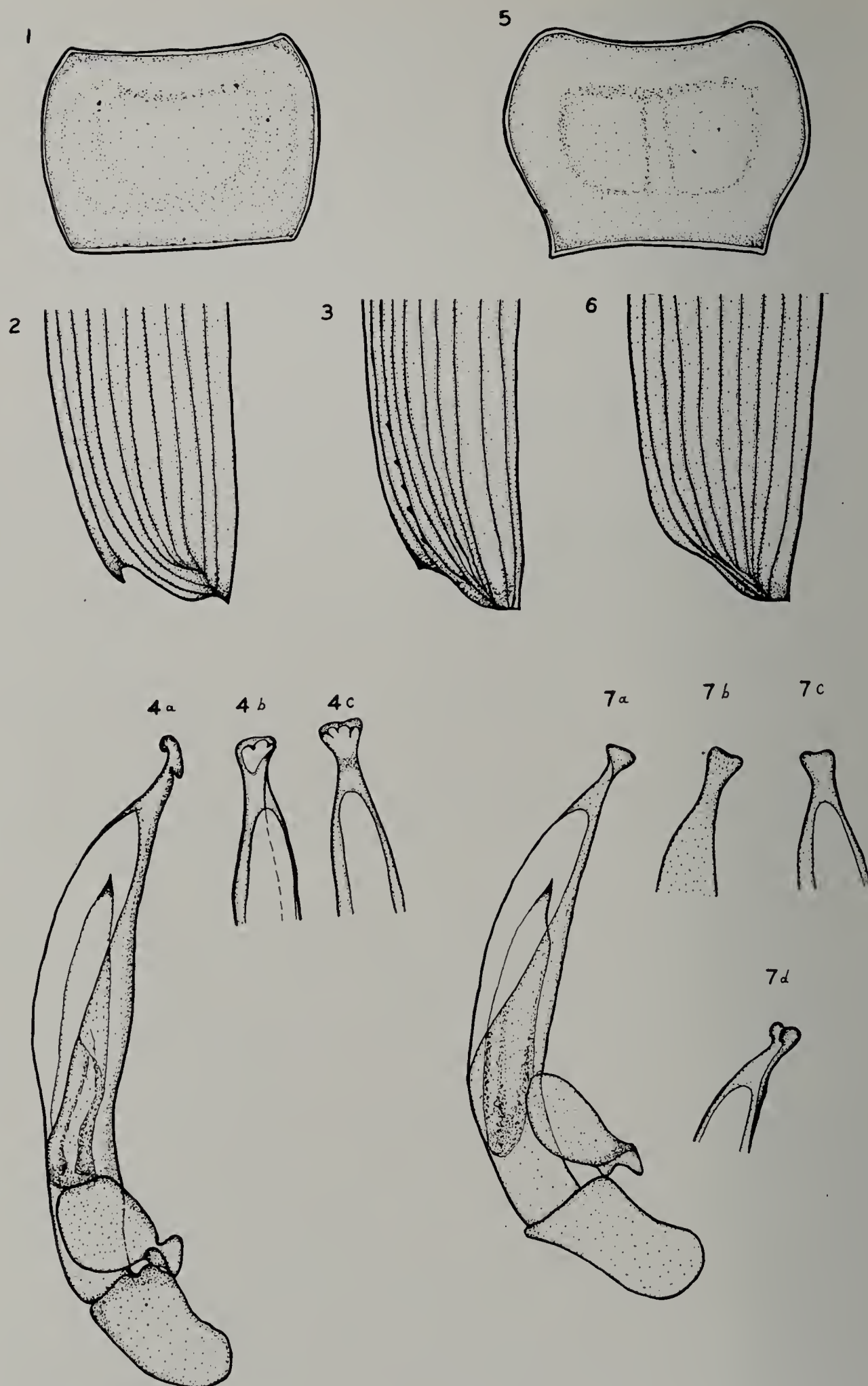
KANSAS (10 males and 8 females) — “Kansas.” Douglas County: “Douglas County”; Lawrence. “Reno County”. “Riley County”.

Sedgwick County: Mount Hope. Sumner County: Wellington.

MASSACHUSETTS (2 males and 3 females)—“Massachusetts”.

MICHIGAN (11 males and 11 females)—Cheboygan County: Douglas lake. Kent County: Grand Rapids. Mason County: Manistee. Wayne County: Detroit.

MINNESOTA (10 males and 6 females)—Cass County: North of Cass Lake. Lake County: Ely.



(Caption on page 39)

FIGURE 1. *H. erraticus*, prothorax, 8x. FIGURE 2. *H. erraticus*, posterior part of female elytron, 8x. FIGURE 3. *H. erraticus*, posterior part of male elytron, 8x. FIGURE 4. *H. erraticus*, male genitalia: a. lateral view; b. dorsal view; c. ventral view, 15x. FIGURE 5. *H. retractus*, prothorax 8x. FIGURE 6. *H. retractus*, posterior part of elytron, 8x. FIGURE 7. *H. retractus*, male genitalia: a. lateral view; b. dorsal view; c. ventral view; d. lateroventral view, 15x.



FIGURE 8. Geographic distribution of *H. erraticus* and *H. retractus* in North America. e, distribution of *erraticus* (examined specimens). e', distribution of *erraticus* as cited in the literature. r, distribution of *retractus* (examined specimens).

MISSOURI (8 males and 6 females)—“Clay County”. De Kalb County: Maysville. St. Louis County: St. Louis City.

MONTANA (3 males and 3 females)—Dawson County: Glendive.

NEBRASKA (4 males and 1 female)—“Nebraska”. Box Butte County: Alliance. Garden County: 8 miles northeast of Oshkosh.

NEW JERSEY (8 males and 3 females)—Bergen County: Emerson. Monmouth County: Freehold. Ocean County: Lakewood.

NEW MEXICO (one male)—Lincoln County: Ft. Stanton.

NEW YORK (9 males and 11 females)—“New York.” Essex County: Elizabethtown. “Franklin County.” New York County: Long Island; New York City.

NORTH DAKOTA (2 males and 4 females)—Billings County: Medora.

OHIO (one female)—“Perry County.”

VERMONT (one male and one female)—Washington County: Montpelier.

WISCONSIN (2 males and 7 females)—“Wisconsin”. Brown County: Green Bay. Dane County: Madison. Sheboygan County: Sheboygan.

B. Canada:

NORTH WEST TERRITORIES (one male) — “North West Territories.”

ONTARIO (5 male and 9 females)—Carleton County: Ottawa. Northumberland County: Coburg. “Prince Edward County.” York County: Toronto.

QUEBEC (10 males and 7 females) — Richelieu County: Lanoraie. Southern Quebec, Junction Routes 52 and 13.

2) Specimens cited in the literature but not examined in the present study:

ALABAMA—Shelby County (Löding, 1945).

COLORADO—(Haubold, 1951)

RHODE ISLAND to INDIANA (Casey, 1914).

2. *Harpalus retractus* Le Conte, 1863

The colour of both sexes is about the same as in *erraticus*, but the majority of *retractus* specimens are dark in colour.

The length of the largest male is 13.0 mm. and of the smallest male 12.0 mm.; that of the largest female is 14.0 mm. and of the smallest female 12.0 mm.

The basal angles of the prothorax are more or less sharply marked and subprominent (Fig. 5). The outer prominences of the elytral apices are very obtuse in both sexes (Fig. 6), however most females have more widely truncated elytral apices and the extreme apices more sharply pointed than those of the males.

The apical portion of the median lobe of the male genitalia is enlarged and not constricted. It has a median longitudinal furrow and shows two lateral knobs when seen from a ventrolateral view (Fig. 7).

This species occurs in the southwestern part of North America: 1) 126 specimens from the following localities have been examined in the present study:

ARIZONA (43 males and 19 females)—“Arizona”. “Apache County” Coconino County: Flagstaff; Williams; Mormon Lake; Walnut. Holbrook. Phoenix. Prescott. St. Michiels (sic!).

COLORADO (4 males and 6 females)—“Colorado”. “Chaffee County”. “Custer County”. Las Animas County: Trinidad.

NEW MEXICO (27 males and 26 females)—Bernalillo County: Albuquerque. Colfax County: “Colfax County”; Koehler. Lincoln County: Ft. Stanton. McKinley County: Coolidge; Pinedale. Otero County: Santa Fe Canyon. “Torrance County”. Ft. Defiance.

UTAH (One female)—Monticello.

2) As cited in the literature this species was recorded from:

MEXICO—(Blackwelder, 1944).

NEW MEXICO and ARIZONA—(Casey, 1914).

DISCUSSION

From this study it appears that the species *erraticus* is distributed in the northern and eastern part of North America while *retractus* is confined to the southwestern part of the continent. The two species are thus largely allopatric, being sympatric only in Colorado. One specimen of *erraticus* was recorded, however, from New Mexico.

Examination of the type specimens of Casey revealed that the characters of *caudalis* are the same as those of *erraticus* and that there is no sharp differentiation between *rectangulus*, *collucens*, *acomanus* and *retractus*.

Based on the evidences from morphology and geographical distribution it may be concluded that the poorly defined new species introduced by Casey (1914) and collected from the same geographical range as the specimens dealt with in the present study, namely *caudalis* (Northern New York to Missouri and Nebraska), *collucens* (New Mexico), *acomanus* (New Mexico) and *rectangulus* (Arizona), are in fact synonyms of the two species of *Harpalus* previously described. Thus *caudalis* is a synonym of *erraticus* Say, while *collucens*, *acomanus* and *rectangulus* are synonyms of *retractus* Le Conte.

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DERMESTID LARVAE DAMAGING KODACHROME SLIDES

Kodachrome slides (35 mm.) in cardboard mounts, stored in metal slide boxes (8" x 15") were found to have developed a number of irregular clear spots. Microscopic examination of the slides revealed feeding marks of a mandibulate insect. These feeding marks occurred most frequently at the edges of the slides, close to the cardboard mount. Larvae of a dermestid beetle, *Trogoderma ornatum* (Say) were found feeding on the emulsion of the film. The main ingredients of the emulsion are gelatin and dyes. Hinton (1945) records the larvae feeding on eggs of spiders, insect and plant museum specimens, grains, seeds and nuts, skins, furs, feathers, and woolens.

In order to control these insects, the insides of the boxes were treated with a 2% Chlordane solution. Fumigants were considered but the Eastman Kodak Company did not feel that a fumigant containing carbon tetrachloride and ethylene



dibromide would be safe. They suggested that carbon tetrachloride alone would not affect the emulsion. Placing a slide in a home freezer was suggested but rejected because of condensation when the slides are returned to room temperature. — E. J. GERBERG, PH.D., *Insect Control and Research, Inc., Baltimore 7, Maryland.*